Mandible matrix necrosis in beagle dogs After 3-years of daily oral bisphosphonate treatment

Mandible matrix necrosis in beagle dogs After 3-years of daily oral bisphosphonate treatment

Allen, Matthew R. ; Burr, David B.

Name: allen-2008-mandib ...
Size: 3.525Mb
Format: PDF

View/Open

Permanent Link: http://hdl.handle.net/1805/4608
Date: 2008-05
Keywords: osteonecrosis of the jaw ; remodeling suppression
Cite As: Allen, M. R., & Burr, D. B. (2008). Mandible matrix necrosis in beagle dogs after 3 years of daily oral bisphosphonate treatment. Journal of Oral and Maxillofacial Surgery, 66(5), 987-994.

Abstract:

Purpose An increasing number of reports have implicated bisphosphonates as contributing to osteonecrosis of the jaw. The goal of this study was to evaluate mandible necrosis in beagle dogs treated for 3 years with oral alendronate (ALN). Materials and Methods Skeletally mature female beagles were treated daily for 3 years with oral doses of vehicle (VEH) or ALN (0.20 or 1.0 mg/kg/day). These doses approximate, on a mg/kg basis, those used for postmenopausal osteoporosis and Paget's disease, respectively. At necropsy, the second molar region of the mandible was excised, stained en bloc with basic fuchsin, and assessed for matrix necrosis and intracortical bone turnover rate using histology. Matrix necrosis was defined as a region greater than 500 μm2 that was void of basic fuchsin stain, assessed using both bright-field and confocal microscopy. Results No animals developed exposed bone lesions in the oral cavity during the 3-year study. Matrix necrosis was observed in 25% of ALN0.2 animals, 33% of ALN1.0 animals, and was noticeably absent from all vehicle animals (P < .05 pooled ALN doses vs VEH). These necrotic regions occurred predominately in the alveolar bone and were clearly void of patent canaliculi. Intracortical bone turnover rate of the alveolar mandible bone region was

significantly lower (−75%, P < .05) in ALN-treated animals compared with VEH. Conclusions Three years of daily oral bisphosphonate treatment reduces bone turnover significantly and increases the incidence of matrix necrosis within the mandible of dogs.

This item appears in the following Collection(s)

- Department of Anatomy and Cell Biology Works (/handle/1805/4108)

 Show Statistical Information (#)

My Account

- Login
- Register

Statistics

- Most Popular Items
- Statistics by Country
- Most Popular Authors